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Combat Crew

strategic air command

AUGUST 1981

DEDICATED TO ALL WHO GAVE THEIR LIVES
IN THE SERVICE OF OUR COUNTRY
379th BOMB GROUP (H)
FLIGHT SQUADRONS 524, 525, 526, 527 & SUPPORT UNITS
TWO DISTINGUISHED UNIT CITATIONS
K
BASE OF OPERATIONS WITH 8th AIR FORCE
AAF STATION 117
KIMBOLTON, HUNTINGDONSHIRE, ENGLAND
MAY 21, 1943 - JUNE 12, 1945
IN HONOR OF THOSE WHO PAID
THE SUPREME SACRIFICE
SPONSORED BY THE 379TH ASSOC.

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Combat Crew

Magazine of the Strategic Air Command - 32nd Year of Publication

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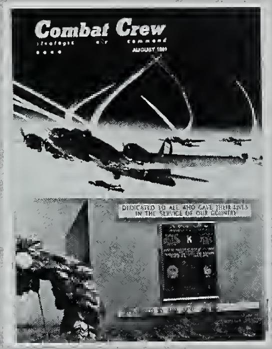

Combat Crew
AUGUST 1981
DEDICATED TO ALL WHO GAVE THEIR LIVES IN THE SERVICE OF OUR COUNTRY

Tribute to 379th Bomb Group

SACRP 127-1 **VOL. XXXI NO. 8** **AUGUST 1981**

COMBAT CREW is an internal publication of the Strategic Air Command with the sole purpose of promoting safety. The contents of this magazine are informative and not to be considered as directive in nature. Facts, testimony and conclusions of all mishaps printed herein may not be construed as incrimination under Article 31 of the Uniform Code of Military Justice. All names, dates and places used in conjunction with mishap stories are fictitous. Written permission must be obtained from Headquarters, Strategic Air Command, before any material may be reprinted by other than U.S. Air Force organizations. Use of funds for printing this publication has been approved by Hq. USAF, Distribution FX, controlled by IGFC. SAC units submit distribution requests through local PDO. Reader to copy ratio 9:1.

Subscriptions are available from: The Superintendent of Documents, Government Printing Office, Washington, D.C. 20402. Price: $14.00 per year domestic; $17.50 if mailed to a foreign country; or $1.20 single copy. Contributions are encouraged as well as comments and criticisms. Direct correspondence with the Editor is authorized. Address correspondence to Editor, COMBAT CREW, Hq. SAC IGFC, Offutt AFB, Ne. 68113. Authority to publish this periodical automatically expires on 7 April 1982, unless its continuance is authorized by the approving authority prior to that date.

A FITTING M

379th Association dedicates USAF Academy Cemetery Memorial Wall

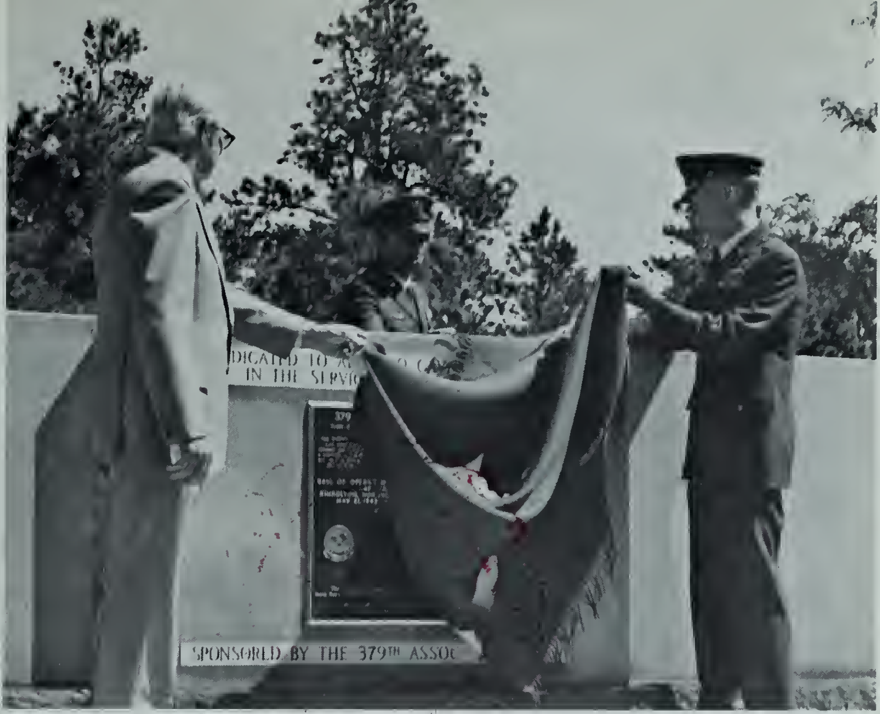
G. F. Farrell
Associate Editor

High on the eastern slope of the Rockies, near Colorado Springs, sits the USAF Academy. Amidst the imposing campus grounds lies the quiet and well kept cemetery of the Academy. Early in June of this year, came members of the famed 379th Bomb Group of World War II, to present to the Academy and to future generations a Memorial Wall dedicated "in honor of all who gave their lives in the service of our country."

The Memorial Wall was brought about through donations made by the veterans of the 379th Bomb

A memorial from one generation to another: David Retseck, Mark Schuster, Michael Retseck and Luke Schuster, all grandsons of a member of the 379th Bomb Group, view the Memorial Wall that their elders made possible.

MORIAL


SPONSORED BY THE 379TH ASSOC

General Maurice Preston, World War II Commander of the 379th Bomb Group unveils the 379th plaque, assisted by Academy personnel.

Group who flew, maintained and supported that highly decorated B-17 unit during the air war over Europe in the early forties.

The 379th Association today is comprised of former members of the 379th Bombardment Group (H), which was formed at Wendover, Utah in December 1942 and moved to Kimbolton Hunts, England, AAF Station 117, in May 1943. The unit was activated for two years, seven months, and 29 days. The 379th flew a total of 330 missions (more than any other group during the period) beginning on May 29, 1943 and ending on April 25, 1945. During April, 1944, the group's achievements included: best bombing results, greatest tonnage of bombs dropped on target, largest number of aircraft attacking, lowest losses of aircraft and lowest abort rate of aircraft sent out. The 379th earned two unit citations, one on January 11, 1944 and one for the period May 28, 1943 to July 31, 1944. The group was commanded by Col Maurice A. Preston, from November 1942 until October 1944 and by Col Lewis E. Lyle, from October 1944 through May 1945.

The USAF Academy Cemetery Memorial Wall, made possible by members of the 379th Bomb Group is a USAF Academy Memorial Board-approved program intended to allow air-related units to remember those of their comrades who died as a result of combat. Future plaques of bronze are limited to 144 square inches in size and must be approved by the Academy Memorial Board. The wall consists of three gray marble units three and one-half feet high, five and one-half feet long set upon an eight-inch black marble base. It is located to the north of the Academy Cemetery flag pole just forward of the Memorial Section. The project, conceived in 1977 and made possible through donations from members of the 379th Association and numerous association project officers, "fills a long-felt need at the USAF Academy to memorialize our heroic airmen who have died in battle." While individual memorials on the wall are discouraged, air-related units wishing to memorialize their combat casualties may write to: Secretary, USAFA Memorial Board (CSU), USAF Academy CO 80840, for more details concerning qualification for this new program.

Four time holder of SAC's Blanchard Trophy

351st SMW TOPS AGAIN...

For a record-breaking fourth time, the 351st SMW, Whiteman AFB, won SAC's annual Missile Combat Competition held at Vandenberg AFB. The coveted Blanchard Trophy, signifying the best overall missile wing in SAC, returned to the 351st where it was held following the 1967, 1971, and 1977 competitions. After three days of spirited competition among nine Minuteman and Titan II ICBM wings, the 351st took top honors by amassing 2639 points out of a possible 3000 points, just two points ahead of the second place team from the 44th SMW, Ellsworth AFB.

Actually, only 14 points separated the top four wings in the competition. Third place in the competition went to the 90th SMW, F. E. Warren AFB.

The Whiteman AFB unit also won the Best Minuteman Wing Trophy, while the Best Titan Wing Trophy was won by the **308th SMW, Little Rock AFB**, the unit which held the lead for two days in the competition. The 308th SMW also took

the Best Operations Team Trophy for the second straight year.

The overall Maintenance Team trophy was won by the 91st SMW, Minot AFB, with 1084 out of a possible 1200 points followed closely by the Whiteman AFB team. The Minot wing also won Minuteman Maintenance trophies for the Best Missile Handling Team, the Best Power Refrigeration/Electric Team and the Best Munitions Team. The 321st SMW, Grand Forks AFB had the Best Minuteman Maintenance Electronics Laboratory Team.

Competing in the Titan missile maintenance area, the 381st SMW, McConnell AFB captured the Best Missile Maintenance award while the 308th SMW, Little Rock AFB took the other team awards in the Best Facility Maintenance, Best Electronics Laboratory and Best Munitions categories.

The Best Civil Engineering Team award went to the 381st SMW, McConnell with 197 out of a possible 200 points, beating out the second place team from Malmstrom AFB by only two points.

The 390th SMW Communications Team from Davis-Monthan AFB won the Best Communications Team award as well as the Best Titan II Communications Team category, edging out the 90th SMW, F. E. Warren AFB by only one point. The 90th SMW won the Best Minuteman Communications trophy. For the second straight year, the 90th SMW also won the Best Security Police Team trophy. The team completed its exercise only 20 seconds faster than the 308th SMW, Little Rock AFB. Both teams accumulated 190 points out of a possible 200 and each won awards for their respective ICBM category. The Olympic Arena '81 victors received their trophies at a formal ceremony on May 7th.

Among special events during the competition this year was a Space and Missile Expo where some 30 aerospace contractor displays were available for viewing by competitors. Displays erected focus on new initiatives in the space and missile field including the MX, NAVSTAR, Air Force Satellite Communications and the Air Launched Cruise Missile.

The 14th Annual Strategic Air Command Missile Combat Competition opened May 1st with the traditional drawing of competition schedules by the nine competing wing commanders. Six Minuteman and three Titan II missile wings vied for the Blanchard Trophy in the three-day event to determine the Best in SAC.

Major General Andrew Pringle, Jr., chief of staff, Strategic Air Command, opened the meet by welcoming the competitors. General Pringle noted, "there has been a change in mood in the nation in the last year." He said this renewed interest in defense puts "ICBM people in the forefront of national defense."

AIRCRAFT ACCI

Maj Michael E. Harvin
19 BMW, Robins AFB, GA

Attention all aircrew members, operational supervisors, and commanders. An important breakthrough has occurred. We no longer have to worry about human or mechanical fatigue causing aircraft accidents. In fact, careful analysis of every aircraft mishap already on the books has revealed that fatigue hasn't caused an accident yet. I know this is hard for some of us to believe. We all have heard numerous stories where the plane crashed because a part broke or the pilot was tired. This same idea always made the old joke about ". . .the fall didn't kill him, it was the sudden stop". What actually killed our man in the story was what ever caused him to fall. Once the fall started the "sudden stop" was an inevitable result. In the same way, once the factor occurred that caused a fatigue crack to start or human fatigue to set in then all that follows is a result.

There are four areas where errors can occur that will cause fatigue problems. These are design, manufacture, maintenance, and operation. Each of these four areas has the attendant area of supervision and inspection.

Men and mechanical parts are both supposed to have a period of time during which they can be expected to perform as required. When either fails and fatigue is evidenced, we can usually backtrack through our four areas of concern and see where the real cause of the accident lies.

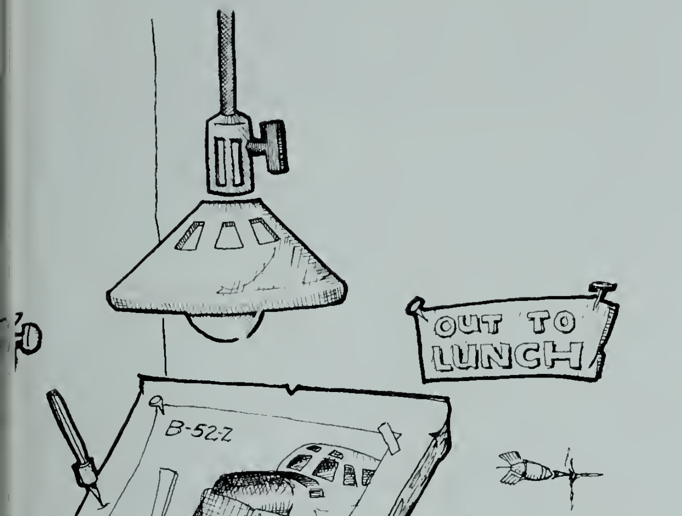
First let's look at machines. Assume that an aircraft crashes and the investigation shows that the wing broke off because the spar had fatigue cracks in it. Sounds like the end of the investigation and a round of "good job" for all concerned. Not so. Where did those fatigue cracks come from? First let's check operations. Was the pilot exceeding the aircraft "G" limitations, or performing an unauthorized maneuver? If so, where was his supervisor? Was it the unit standard to engage in these unauthorized activities, or did the unit supervisors actively encourage strict adherence to published procedures?

Ok, let's assume operations were normal. What about maintenance? Did the last wrench-bender follow tech data to the letter? If not, why wasn't his supervisor there to catch it? Could it have been that the work was done at night when most of the experienced people are often off duty? It turns out that this Maintenance Unit was dedicated to full time quality supervision of all maintenance activities.

So far, no problems found. Manufacturing mistakes are a possibility. For example, a small nick in the side of a bolt hole can cause a stress concentration that will lead to failure of an entire part, prior to the designed service life. But the inspection is only as good as we pay for and this is a lowest bidder produced item.

Well, now what? We have a fully qualified pilot, performing an acceptable maneuver, in a perfectly maintained and constructed machine, whose wing fell off. The last culprit is design. One of our large jet transports began to develop cracks in its wings, long before its airframe useful life time arrived. It turned out that the Air Force had requested a design change to the original wing in order to save some weight.

A breakdown in any one of our four areas of concern makes the resultant hole in the ground inevi-



ENT “CAUSES”

table. Fatigue failure occurred but the true cause existed long before the fatal crack in the metal appeared.

How about Human Fatigue? The same four areas of concern hold true. Design, construction, maintenance, and operations. Supervision/inspection again plays an important role in each of these areas.

Let’s assume a bird hits the dirt and the investigation shows that the pilot made an incorrect response during a high stress situation due to fatigue. Will the investigation then be successfully completed with the time honored stamp “Pilot Error”? Maybe. But why was the pilot unable to make the correct response that would have kept the mission routine? First, the operator—was he qualified, current, motivated, confident that he was well-prepared for the mission? Did his new form-fitting helmet fit just right? Was his home life happy? If not, where were his supervisors? Possibly they were locked into the “mission accomplished/ syndrome. Had a peer group pressure to “press” been allowed to develop? Or did the supervisor take an active interest in his crews? Did his familiarity with their capabilities, currency, and motivation allow him to accurately assess their probability of successfully completing their tasks?

Ok, body operations were normal, how about body maintenance? Had the crewmember taken the proper care of his body or was he hypoxic from smoking? Was his hearing damaged from improper ear protection? Was his heart struggling against the weight of extra fat? Or was his head throbbing from last night’s hail-and-farewell? Is this the unit standard of performance or are the unit safety shop, the flight surgeon, and the individual supervisors actively involved in providing the crewmember with the knowledge of the consequences of improper body maintenance?

Well, once again, let’s assume all has been well. The pilot was trained, motivated, fit, and supervised. But he broke. The third area we need to examine is construction. This area usually receives careful attention once a year when blood samples are taken and ears, eyes, and the rest of the body are subjected to pokes and prods from the flight surgeon. But we must also look at arm reach, leg reach, strength, and body size, to see if the individual was capable of performing the tasks required under other than normal conditions. The squadron instructors must continually be on the lookout for the various traps that are built into almost every piece of equipment designed for the “average” man.

Finally, let’s look at design. In this case not the design of the man, we’re stuck with that. But the design of the machine. Did we design the cockpit so that the work load increases in stress situations, like combat or IFR weather? The overload of increased tasks that must be performed in precise sequence during periods of increased tension is enough to put the most capable individual into an unsafe condition. We must solicit information from the individuals using the equipment. Then there are the supervisors and inspectors who must finally decide if the machine and man together can do the job.

I believe we ought to take a few moments for a simple retirement ceremony and allow those two time honored warriors, “THE PART BROKE” and “PILOT ERROR”, to pass on into Air Force History. We have four fast burners waiting to take their place, DESIGN, CONSTRUCTION, MAINTENANCE, and OPERATION. Let’s give them a chance.

EARLY WARNING

1Lt John C. Dymond
2Lt Carmen M. Alatorre
6MWS

From afar it looks more like some sort of giant solar collector than a radar. Nothing moves. Yet within the 105-foot-high pyramid-like structure is a maze of electronic equipment — equipment sensitive enough to track a satellite no bigger than a basketball, orbiting 1,200 miles in space, or to spot an enemy missile more than 3,000 miles away.

The huge radar poking out over the treetops at Otis Air Force Base in Massachusetts is officially called the Cape Code Missile Early Warning Station, but it is better known as PAVE PAWS. From its perch overlooking the Atlantic, the radar can detect and provide early warning of a sea-launched ballistic missile attack. Along with its twin, which stands watch over the Pacific from Beale Air Force Base in California, the PAVE PAWS system wraps a tight radar shield around the United States.

The new semi-rigid radome recently installed at Det 1, 20th MWS. The detachment is responsible for detection and warning of sea-launched ballistic missiles. Det 1 is unique in that it is the sole survivor of the six former SLBM sites replaced by the PAVE PAWS system (Courtesy Det 1, 20SMS, MacDill AFB.)

Aside from the sheer size of the radar, what sets it apart from other early warning systems is the technology itself. Both radars were built for the Air Force Systems Command by Raytheon and both are totally solid-state — all the radar energy is generated by thousands of power transistors, each smaller than a dime. Add to that the fact that there is no giant rotating antenna, and that every component of the system has an identical back-up, and what you have is a truly unique detection and tracking system with reliability well over 99 percent.

Replacing the traditional antenna are two honeycomb-like arrays, each made up of individual antenna elements, which send out a radar signal and receive the echoes a split-second later. But, unlike traditional radars, the antennas don't move. Instead, the radar energy itself is directed, or phased, electronically by controlling precisely when energy is fed to each element. This phasing is similar to what occurs when stereo sound, such as the sound of a moving train, seems to travel across a room. This minute shift in timing from one speaker to another directs the sound in much the same way that the radar signal is directed. With the radar it isn't quite that simple, but each target can be reexamined every few seconds.

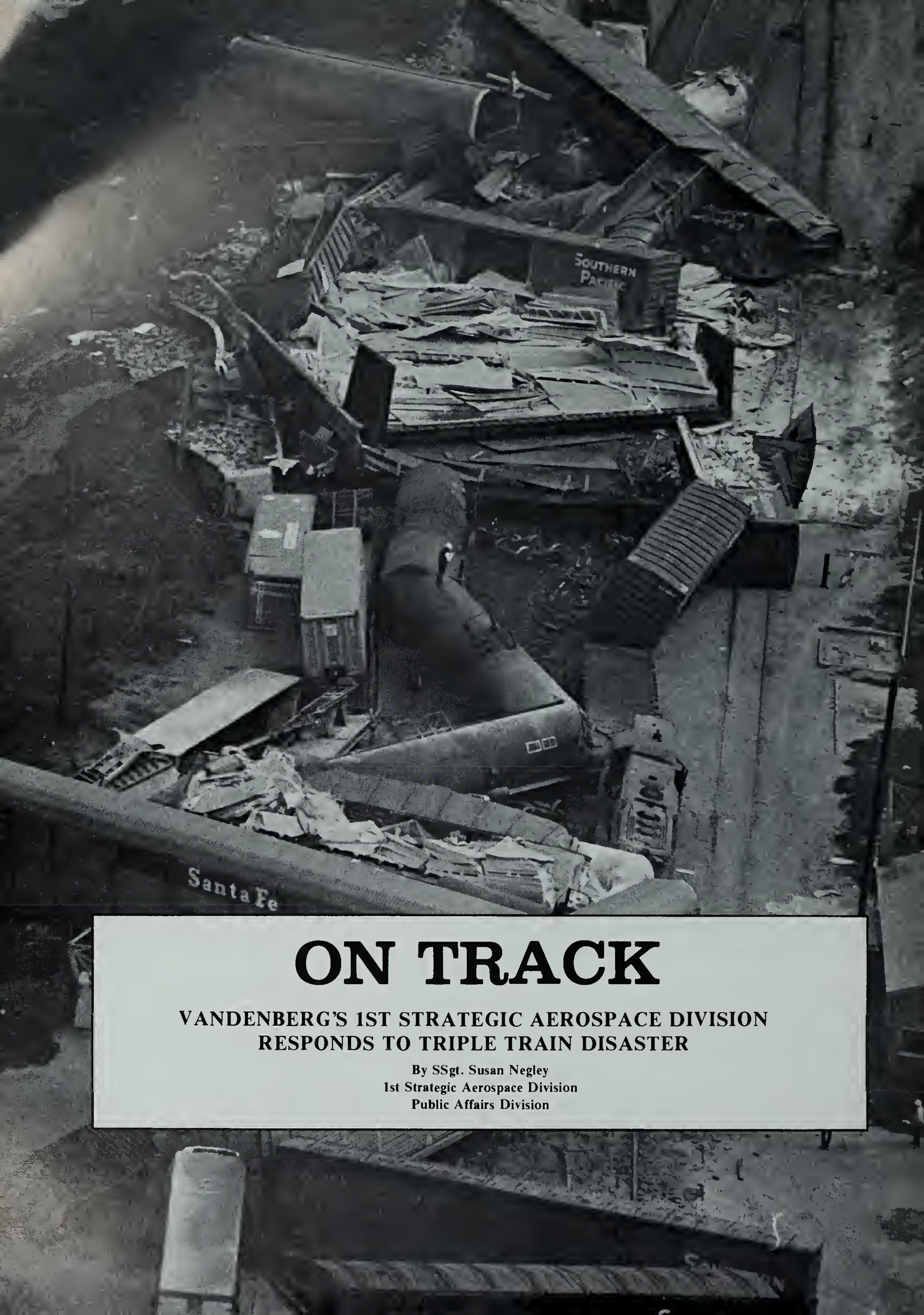
At the same time the radar is scanning the skies for sea-launched missiles, it is also tracking the paths of more than 1100 satellites and nearly 3400 pieces of debris orbiting high above the earth, taking special notice of some 400 or so satellites that have been designated "high interest" by the Space Computational Center in Colorado Springs. A bank of computers at each of the PAVE PAWS sites provides information on where each "high interest" satellite should be and precisely when it will enter the coverage range of the radar.

All this tracking and monitoring occurs behind locked security doors on the building's fourth floor. The Tactical Operations Room, or TOR as it is called by those who spend their days and nights there, is accessible only to a handful of officers and enlisted personnel assigned to the Strategic Air Command. The carpeted floor and the soft green glow of the display screens add to the quiet efficiency of the place. It takes just a matter of moments to realize that the TOR is all business. The main job of the personnel assigned there is straight to the point — to prevent a surprise attack on the United States through constant surveillance.

The primary sources of information for the five-person crew in the TOR are the six graphic display consoles which take up most of the room. The consoles are linked with the site's main computers on the floor below. Up to 35 different displays can be called up on the screen by the operator using the keyboard and a light pen.

Yet it isn't only the operator who initiates action. Various conditions within the radar will trigger alert messages on the screen which, based on their priority, will blink, sound an alarm, or both. The alerts will not disappear from the screen until some appropriate action is taken by the operator. In the event of a missile attack, instantaneous warnings would be flashed via high-speed independent data lines to the headquarters of the North American Aerospace

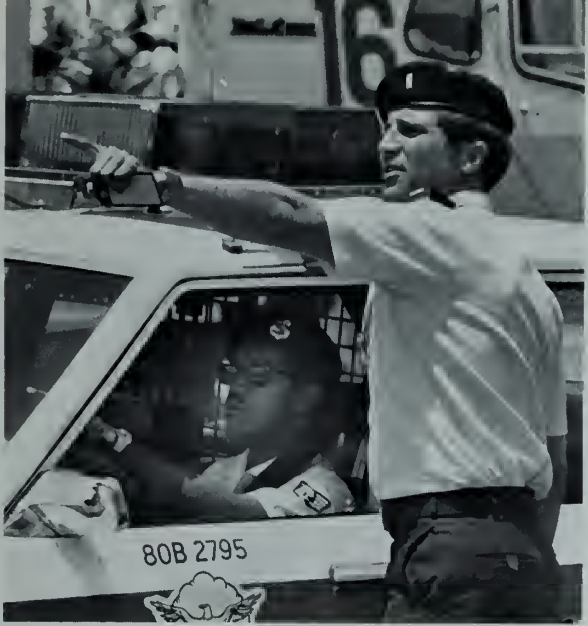
Continued on pg. 14



ON TRACK

VANDENBERG'S 1ST STRATEGIC AEROSPACE DIVISION RESPONDS TO TRIPLE TRAIN DISASTER

By SSgt. Susan Negley
1st Strategic Aerospace Division
Public Affairs Division



1st Strategic Aerospace Division Security Policemen 1st Lt Mark Goslin and SSgt. Clarence Forster survey the scene of the triple train disaster here May 22. (USAF Photos by TSgt. Mike Noss)

The 1st Strategic Aerospace Division Disaster Control Group was called out in the early morning hours May 22 when three Southern Pacific trains derailed off lines running along a narrow strip of Southern Pacific land that separates the northern and southern halves of this immense California base.

While most of the base lay quiet in pre-dawn darkness, scattered pockets of activity grew in response to the Command Post's urgent calls. And, within 10 minutes of the 4:10 a.m. request for assistance from Southern Pacific authorities, Vandenberg rescue teams were on the scene.

The sight of more than 70 derailed cars, the possibility of a toxic gas leak and the question of how many survivors lay amongst the twisted metal and broken wood confronted them.

As usual, security police, and medical, firefighting and rescue teams were the first to arrive on scene. They immediately began their systematic search of the wreckage, shutting down the engines, and inspecting the entire lengths of the trains. By 4:20 the first victims to be found were receiving first aid; seven minutes later they were on their way to the Vandenberg Hospital.

Meanwhile, firefighters had confirmed that not only ammonia but also chlorine gas was leaking from ruptured tank cars and evacuation was stepped up. Wearing self-contained breathing appartus, the rescue workers continued their search for injured, forcibly entering a caboose in search of a brakeman.

By 4:40, 4392d Aerospace Support Group Commander Col. John N. Shults was on scene to assume control and direct activities there. But not all of the action that morning was at the scene.

Back on the main portion of the base, emergency preparations were underway; control centers were activated and check-list procedures implemented.

The Vandenberg Hospital Emergency services initiated recall, dispatched ambulances, activated their command post, formed a 60-man manpower pool, and checked blood and medical supplies in preparation for the unknown number of anticipated patients.

When on-duty security police had been dispatched to the scene, others established traffic control points and secured the cordoned-off area. While on-scene firefighters continued their search and rescue procedures, other members of the Vandenberg firefighting team were standing by in the seven fire stations located around the base.

By 5 a.m. the last of the Disaster Control Group members had been awakened and were on their way to their appointed destinations. All Public Affairs personnel were recalled and representatives dispatched to the scene, the Command Post, and their Press Center to handle local news media already gathering. Before the day was out, Public Affairs would handle news media from all the major networks and nearly every major media agency along the California coast from Los Angeles to San Francisco, as they flocked by helicopter, airplane, and car to cover the event.

The often practiced, well-trained Disaster Control Group, aided by members of county emergency services teams, were able to bring all danger of further toxic fume leaks under control, and evacuate the injured by 7 a.m. Miraculously, of the 17 people transported to hospitals that morning, only eight sustained injuries — all of them minor.

Within four hours of the crash, the Disaster Control Group had turned over operations at the scene to Southern Pacific personnel who were able to begin recovery and mop-up.

By 8:30 a.m. the tired but gratified Disaster Control Group was dispersing to join the rest of the base and begin another day.

Col. John N. Shults, Aerospace Support Group Commander, briefs members of the Disaster Control Group on scene May 22 after three Southern Pacific trains derailed near the base. (USAF Photo by TSgt Mike Noss)

ADSAC

Capt. Michael J. Falvey
Navigator, 43 AREFS, Fairchild AFB, WA

"How can I ever get any career broadening when they won't let me out of the cockpit?" I wish that I had a nickel for every time I've heard that question while sitting around the dinner table at the alert facility. I'm glad, however, that I haven't had to forfeit a nickle for every time that I was the orator. Most people will agree that some form of career broadening is especially important if the career in question is that of a professional Air Force officer. You don't have to take my word for it. One lesson I'll always remember from CFIC is that you should know where something is written before you profess it as fact. There is a little known SAC Regulation, henceforth known as SACR 36-9 which states:

"Career broadening helps to increase an officer's potential and is therefore an integral part of the career development of a professional officer corps."

While it may be true that the present situation requires keeping officers in the cockpit or silo for longer periods of time, there is no need to despair. Facing reality, however, may require a moderate attitude adjustment. For those crewmembers hoping for a rated supplement assignment there is good news and there is bad news. The bad news is that the rated supplement is not our birthright by virtue of the fact that we wear wings. The good news is that the rated supplement still exists and officers in the smaller year groups will have good opportunities for garnering a job for themselves in the future.

Good things do not always come to those who wait or at least they don't come fast enough. Most of us do more than enough waiting as part of a bomber, tanker or missile crew. Sometimes you just have to take matters into your own hands. Once again you don't have to take my word for it. SACR 36-9 says that,

"To a large extent each officer's initiative in taking advantage of opportunities will determine the success of his or her career." If you would like to take that initiative, then the Strategic Air Command Additional Duty Career Development Program (ADSAC) is just the chance that you've been waiting for. The primary objective of the ADSAC program is to provide just such an opportunity for those who desire it.

ADSAC

Your Opportunity for Career Broadening

Well what is ADSAC all about you might ask? Simply stated, ADSAC is designed to afford volunteer officers the opportunity to participate in and become familiar with a variety of specified support functions. For fliers, the ADSAC program could provide an inside track towards that elusive supplement tour. For missile crew members, ADSAC provides a strong foundation for the next assignment in or out of the missile career field. When you think about it, the ADSAC program makes a great deal of sense. You wouldn't apply for a job as a bank president with only your good looks as credentials, would you? Well maybe some of us would, but most people would try to develop some background in banking before they would aspire to such lofty heights. Why shouldn't the same logic apply in today's Air Force. As the competition for assignments increases, your qualifications could carry more and more weight in the selection process.

As an ADSAC volunteer you would be able to work in the organization of your choice learning and experiencing things that too many crew members take for granted. You'll receive an LOE upon completion of your training and the entry level AFSC will be awarded to you. That's correct, the all important AFSC will find its way into your file at MPC where it can earn you interest just like money in the bank. There is no specific time requirements for ADSAC programs but weekly participation is encouraged. With an honest effort an officer should be able to complete an ADSAC program in six months. One more attractive aspect of the ADSAC program is that no active duty service commitment is incurred as a result of ADSAC participation.

SACR 36-9 and SACP 36-10 provide all of the guidance for the ADSAC program. The accompanying table lists all of the ADSAC program areas and the applicable volume of SACP 36-10. If you would like to learn more about a specific area then visit your Master Publications Library and examine the appropriate volume of SACP 36-10. Each volume contains a course description as well as any mandatory or recommended prerequisites. You'll also find a complete syllabus for the ADSAC volunteer to follow.

I would strongly recommend that you talk with your squadron commander as well as the director of personnel before setting your sights on any one area. These people have valuable experience that you can benefit from by way of advice. Since organizations are only allowed one ADSAC volunteer at a time, the DP can advise you as to which slots are available at that time. This will save you from traveling too far down a dead end road.

The next person you'll want to talk to is the commander or supervisor of the area that you would like to work in. Their approval is required before you can begin the ADSAC program for that specific function. If all parties are in agreement, you can submit an ADSAC application in letter format to your wing commander and you'll be on your way. An example of the letter of application is contained in SACR 36-9.

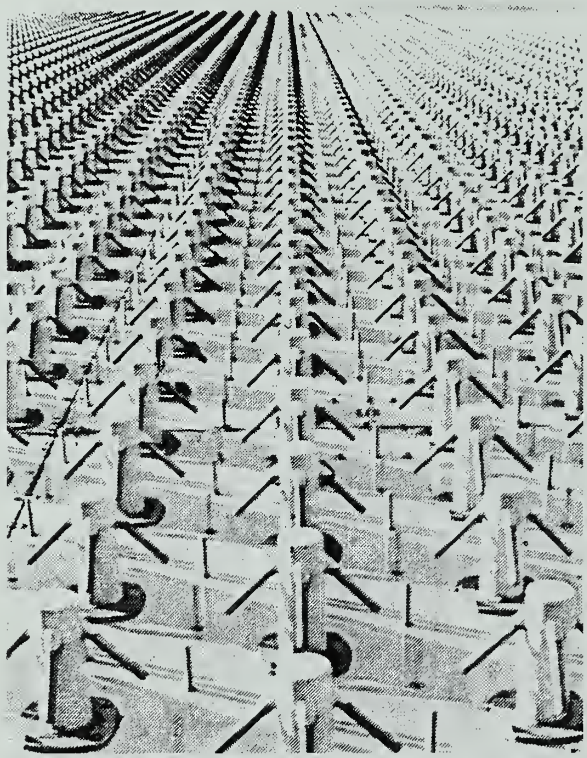
Most commanders will recognize the potential value of your ADSAC training. They realize that with the draw down in rated supplement assignments, a program of ADSAC's nature can prove to be a major source of experience for professional Air Force officers.

Successful completion of an ADSAC program will not be easy. It will require the sacrifice of what *"free"* time you now have as well as a good deal of effort. Just remember the ADSAC program the next time you hear yourself complain of being stuck in the cockpit or in the silo. ADSAC is there for you. Good Luck!

Continued from pg. 9

Defense Command at Cheyenne Mountain, Colorado, as well as to the National Command Authorities at the Pentagon and to the headquarters of the Strategic Air Command in Omaha.

Since the TOR crew is operationally responsible to NORAD through the missile warning center at Cheyenne Mountain, a hot line links the staffs at each location. At the first sound of a missile warning alert, the hot line is used to supplement the specific launch and impact information contained in the automatic message. With this, the TOR officer also relays what can be an even more important piece of information — the confidence level — the on-site human analysis of the situation.



Another unique feature of the two radar sites is that each is totally self-sufficient. This includes the obvious back-up circuits and systems common to any sophisticated electronic installation, as well as such things as a power generating plant, an artesian well at Otis to provide thousands of gallons of cooling water, and a complete maintenance and repair facility to keep hundreds of printed circuit boards as well as the plug-in transmitter/receivers up and operating.

The role of science and technology in national defense may be more visible elsewhere, but nowhere is that role more important than at PAVE PAWS.

WE NEED YOUR COMMENTS . . .

Please take the time to fill out a grade sheet on the quality of this publication. It is your magazine and now is your chance to let us know what you like or don't like.

All you have to do is cut out one of the survey sheets on the following page, fill it out and send it to us. Use either the military distribution system (MDS) or the postal service; however, the MDS is preferred. We are soliciting constructive comments to help us produce the kind of magazine you would like to read.

This readership survey is conducted as required by AFR 5-1, para 12-23. In accordance with AFR 12-35, para 30, Air Force privacy Act Program, the following information about this survey is provided: (a) Authority: 5 USC 301, Departmental regulations, 10 USC 8012, Secretary of the Air Force: Powers and duties; Delegation by: (b) Principal use: To collect opinions about Combat Crew magazine; (c) Routine uses: Data to be used by decision makers in evaluating effectiveness of publication and for submission with DD Form 1909; (d) Participation is voluntary; (e) Effects on respondents: No adverse action will result to individuals as a result of this survey.

CUT ALONG SOLID LINE

Combat Crew Reader Response Form

Please answer the following questions and forward to *Combat Crew* Magazine

1. How many issues of *Combat Crew* have you seen in the past year? Circle one:

   1 2 3 4 5 6 7 8 9 10 11 12

2. How soon after publication month do you usually see an issue of *Combat Crew*?

   Check one: ☐ Same month ☐ One month later ☐ Two months later ☐ Three or more

3. How do you usually receive a copy? Check one: ☐ Through normal distribution.

   ☐ From someone else. ☐ See it in the work center. ☐ Rarely see a copy.

4. Plese indicate your response to the following quality of articles and features.

	CONTENT			FREQUENCY		
	EXC	GOOD	POOR	EXC	GOOD	POOR
EDITORIAL						
ARTICLES FROM UNITS						
HQ STAFF ARTICLES						
BIG INSTRUMENT						
R & D CORNER						
CFIC CORNER						
SAFETY ARTICLES						
MISSILE MISHAPS						
MAINTENANCE ARTICLES						
COMPETITIONS ARTICLES						
PROFESSIONAL PERFORMERS						
SAC SAFETY SCREEN						
HALL OF FAME						

5. Would you submit an article? ☐ Yes ☐ No

6. Have you gained any additional safety awareness by reading *Combat Crew*? ☐ YES ☐ NO.

   How well do you think *Combat Crew* gets the safety message to the SAC combat crew member? ☐ EXCELLENT ☐ GOOD ☐ FAIR ☐ POOR

7. Graphic Presentation (art work, photos, etc.) ☐ GOOD ☐ FAIR ☐ POOR ☐ CAN BE IMPROVED

If so, how? ______________________________

8. Please indicate ways the staff of *Combat Crew* can better serve our readership, the SAC combat crewmember. ______________________________

____

____

My Air Force Job Is ______________________________

Combat Crew Reader Response Form

Please answer the following questions and forward to *Combat Crew* Magazine

1. How many issues of *Combat Crew* have you seen in the past year? Circle one:

   1 2 3 4 5 6 7 8 9 10 11 12

2. How soon after publication month do you usually see an issue of *Combat Crew*?

   Check one: ☐ Same month ☐ One month later ☐ Two months later ☐ Three or more

3. How do you usually receive a copy? Check one: ☐ Through normal distribution.

   ☐ From someone else. ☐ See it in the work center. ☐ Rarely see a copy.

4. Plese indicate your response to the following quality of articles and features.

	CONTENT			FREQUENCY		
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MISSILE MISHAPS						
MAINTENANCE ARTICLES						
COMPETITIONS ARTICLES						
PROFESSIONAL PERFORMERS						
SAC SAFETY SCREEN						
HALL OF FAME						

5. Would you submit an article? ☐ Yes ☐ No

6. Have you gained any additional safety awareness by reading *Combat Crew*? ☐ YES ☐ NO.

   How well do you think *Combat Crew* gets the safety message to the SAC combat crew member? ☐ EXCELLENT ☐ GOOD ☐ FAIR ☐ POOR

7. Graphic Presentation (art work, photos, etc.) ☐ GOOD ☐ FAIR ☐ POOR ☐ CAN BE IMPROVED

If so, how? ______________________________

8. Please indicate ways the staff of *Combat Crew* can better serve our readership, the SAC combat crewmember. ______________________________

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My Air Force Job Is ______________________________

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COMBAT CREW
HQ SAC/IGFC
OFFUTT AFB, NE 68113

“The Sky Is Falling”

Capt Thomas Boyd
Hq SAC/LGMS, Offutt AFB

Over the last five years, 529 objects have fallen from SAC aircraft, not including those caused by natural phenomenon or intentional jettison. We define falling objects as the loss of aircraft parts, components, stores, surfaces and other items from engine start, through flight, to engine shut down. So we lose an occasional object from our aircraft; isn't that a hazard of the business? After all, our rate was only 1.8 incidents per 1000 sorties and we did fly 69,510 sorties last year. It is true anything that flies has the potential to drop something. However, in most cases, the objects that fell from our aircraft were not necessary and could have been prevented. These objects are a major concern to us because of their severe injury/damage potential, high replacement/repair cost, and the adverse publicity if a falling object struck a person.

Fortunately, none of the 124 lost objects reported last year resulted in damage, injury or significant embarrassment to the Air Force. However, with such risks in mind, it is clear that we must be vitally interested in falling object prevention. Most falling objects are preventable and the severe potential hazard involved demands that we prevent them. The falling object prevention (FOP) program has been active for a number of years with the objective to prevent objects falling from our aircraft. We often lose sight of the objectives of a particular program, or we fall into the trap of being interested only when the boss is interested. The FOP program is no exception. We should always remember the objective of preventing things from falling off our aircraft.

This year we have averaged 12 falling objects per month through May which is a significant increase over last year. A recap of some of the most frequently lost objects during 1980 follows:

B-52—Engine oil servicing/access panels
  Engine fire access panels/doors
  Fuel tank caps
  Pylon panels
  Vertical stabilizer panels
C-135—HF antenna and couplers
  Engine fire access panels
  Dry bay access panels/doors
  Hydraulic Access panels
FB-111—Lower UHF antenna
  Flap vane assemblies
  Landing lights
  Main landing gear hub caps
SR-71—Fillcaps
T-38—Single point refueling access panels

These are just a few of the many items that fell from our aircraft last year. Numerous other items were involved in single falling object incidents. Most of these incidents can be attributed to the failure of “someone” to detect bad fasteners, an improperly installed panel, or a loose panel. Through a combined effort of technicians, crew chiefs, supervisors and flight crews, we can minimize falling objects. Each of us can contribute to this effort by being familiar with aircraft panels, doors, and other components that have the potential of being a falling object. The real essence of the FOP program is to identify panel deficiencies and have them corrected before the panel is reinstalled. However, follow-up checks by supervisors, quality control and the flight crew are essential to insure air worthy aircraft. We need your trained eyes to help.

Several units had outstanding FOP programs last year and three had zero falling objects. Congratulations to the personnel at 19BMW/Robins AFB, 305AREFW/Grissom AFB, and 46AERODW/Peterson AFB.

Busy Wire SRAM Modification

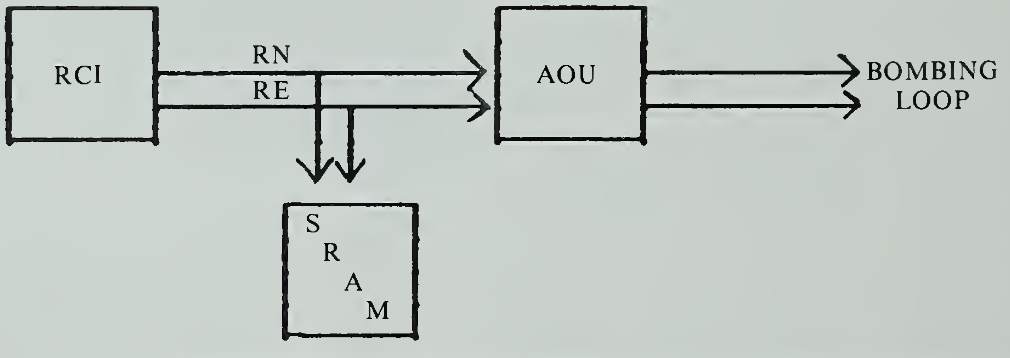
As a B-52 navigator, how often have you thought the Short Range Attack Missile (SRAM) should be better integrated with the aircraft bombing/navigation system? Perhaps you needed a divergence check on a target more than 17½ nautical miles (NM) from your reference point but the system could not provide it. You may have had a programming problem in that excessive SRAM divergence required more fixes than the route navigation plan allowed. If you can identify with these problems, the Busy Wire modification should interest you.

Busy Wire is the unclassifed nickname associated with the SRAM ranging modification for the B-52. Local maintenance personnel completed this modification on several of the 319th Bomb Wing's B-52H aircraft during April and May 1981. The modification is a relatively simple wiring change that can be completed in approximately three hours.

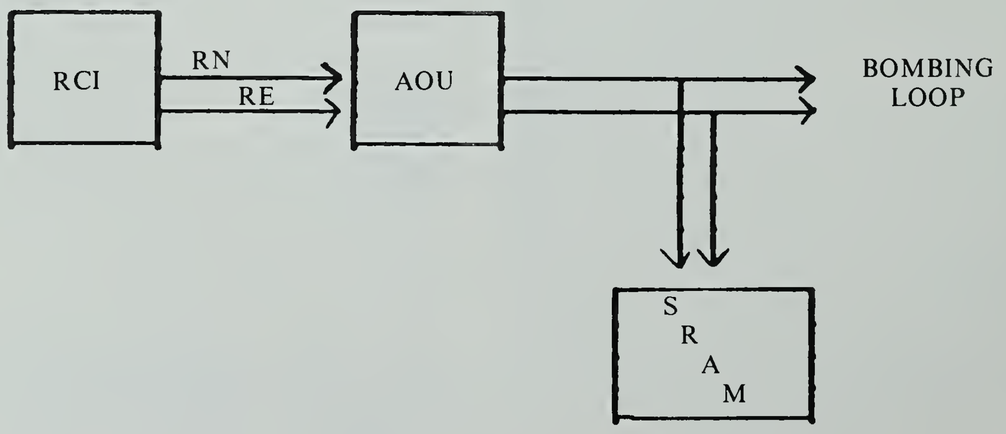
With this change, the SRAM uses ranging information from the Automated Offset Unit (AOU) rather than the Range Coordinated Integrator (RCI). Ranging information from the AOU will significantly impact system operation in the MULTI-TGT mode, especially when the range to the reference point exceeds 17½ NM. Without the modification, the SRAM measures RN and RE voltages at the RCI, and with the change it examines those values after they pass through the AOU. Therefore, the SRAM Inertial Navigation System (INS) can be updated or used for a radar target readout whenever the aircraft is within 17½ NM of the active point in the AOU, not merely when it is within 17½ NM of the RCI, or reference point.

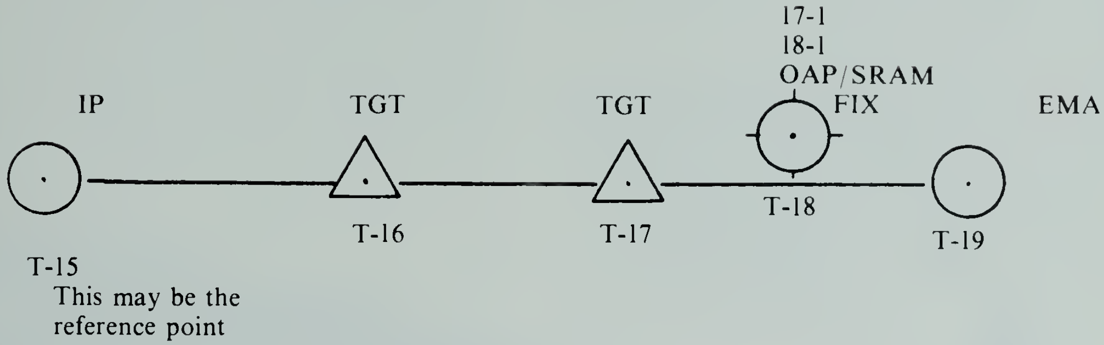
Diagram one illustrates this wiring change.

BEFORE MODIFICATION:



AFTER MODIFICATION:





This modification is designed to reduce SRAM missile impact error by increasing SRAM/AOU system flexibility. The 319th Bomb Wing tested the feasibility of this modification on training flights from 1 April through 29 May 1981. SRAM launch scores during the test validated the concept that this modification would improve SRAM scores.

Bomb Wing aircrews who flew the test sorties found three primary advantages inherent in this modification. The first advantage is the ability to start the bomb run early by referencing the AOU to a point well short of the target. The early start on a bomb run primarily benefits the radar navigator. When he must reference the AOU, acquire and take the Timing Initiation Point, and turn to make good a rollout track, all at the Initial Point (IP), a significant workload and time compression problem arises. The early AOU rereference greatly reduces that workload. Whenever the distance from the IP to the last target is less than the RCI range, which is not affected by this modification, the radar navigator can reference on the IP and engage MULTI-TGT while still 60 to 80 NM from the target instead of 45 NM. This is important because early referencing with the use of larger Offset Aiming Points (OAPs) minimizes the chance of AOU procedural error.

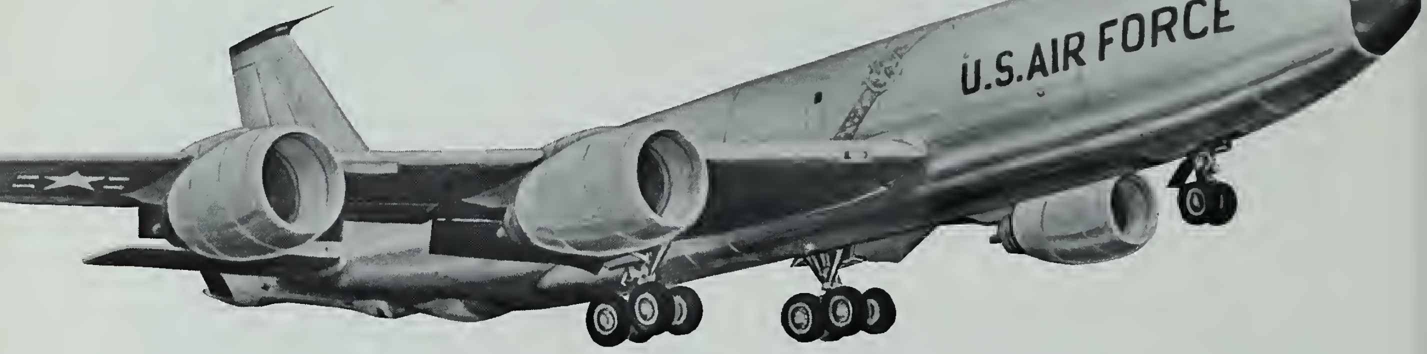
The second advantage is increased SRAM flexibility. This flexibility enhances low level navigation and radar scope interpretation. The operator can use SRAM Radar Target function to check the coordinates of each turnpoint and the crosshair placement on OAPs for that turnpoint. Increased SRAM flexibility also enhances SRAM programming. The crew can take update fixes on any turnpoint with a precise OAP near it, thereby achieving optimum fix pacing. There is no need to rereference the AOU to take SRAM fixes. This reduces crew workload for routes that double back on themselves or when SRAM divergence indicates the need for increased fixes. The increased availability of update fixes also facilitates a low level SRAM recycle should one be required.

The third advantage is the most important and the most difficult to implement. It is the reduced coast time between launch point fix (LPF) and SRAM launch. Reducing this time has significantly increased SRAM accuracy on test launches. The most direct application is a simple Synchronous — Synchronous — Missile run with the LPF taken on the bombing target. The operator can load the second target rather than the first target as the SRAM launch fix and acquire that fix prior to release on the back target. This will reduce coast time by two to three minutes. Therefore, the modification is very adaptable to bombing plans that reference the bombing target.

The new system is more complicated for those Bomb Wings that have decided to update their SRAM systems while aiming directly at a radar fix point without using OAPs. The 319th Bomb Wing has taken SRAM LPFs in this manner for two years. In the past, 319th Bomb Wing operators referenced the AOU to a bombing OAP and took the LPF while using that OAP to synchronize on the bombing target. It is no longer possible to use

Continued on pg. 21

r&d corner



KC-135 REENGINING

Major Robert O. Waring
HQ SAC/XPHV

On January 1974, the approval of Engineering Change Proposal 405 Life Extension (Reskin) Project at Oklahoma City sparked the initial interest in upgrading the KC-135 systems. On 30 November 1976, a Program Management Directive initiated the KC-135 Reengine Program by authorizing program planning for a prototype that could culminate in the modification of a number of KC-135s. Three jet engines were in competition for the reengined KC-135s; CFM International's CFM-56 (US General Electric/France SNECMA Consortium), Pratt and Whitney's JT8D (under development for commercial airlines) and the Pratt and Whitney TF-33, used on C-141 and B-52H aircraft, which could be modified for KC-135 application. On 11 September 1978, a Configuration Selection Board began review and evaluation of the Boeing Military Airplane Company's proposal for the competing engines. The Configuration Selection ended 22 January 1980, when the CFM-56 engine was chosen to reengine the KC-135.

The CFM-56 is a modern technology high bypass turbofan engine being developed jointly by the General Electric Company and SNECMA of France for use in high performance subsonic commercial aircraft. The engine has been commercially certified for operation at sea level static thrust of 24,000 pounds at 86°F. Certification of CFM-56 engine used on the KC-135 is scheduled to occur in November 1981. The maximum certified sea level static thrust rating for this engine will be 22,000 pounds at 90°F.

Reengining the KC-135 with the CFM-56 turbofan is a positive step toward energy conservation. It will consume 25 percent less fuel than the KC-135A with J-57 engines. This will result in a savings of approximately 180,000 gallons of fuel per year per aircraft at the current flying rates.

Acoustically, the CFM-56 is a much quieter engine than the J-57. In fact, at maximum takeoff thrust, it is 96 percent quieter. This is equivalent to reducing the J-57's 200 square mile objectionable noise footprint to only eight square miles! The CFM-56 should therefore greatly decrease our noise abatement woes.

The increased thrust of CFM-56, 22,000 pounds versus 13,750 wet for the J-57, will allow the KC-135 to takeoff from a 11,000 foot runway on a 90° day at sea level pressure altitude with full fuel tanks (203,400 pounds). This makes the maximum takeoff gross weight equal to 322,500 pounds. This increased fuel load, plus the reduction in fuel consumption, increases the offload capability of the reengined KC-135 by 50 percent for the typical EWO mission.

In addition to the installation of CFM-56 engines and new engine struts, specific changes to the airframe and subsystems are required and are summarized below:

Empennage — Due to the increased thrust, the horizontal stabilizer will be increased from 500 to 545 square feet. Same configuration as C-135B.

Landing Gear — The landing gear for the reengined KC-135 will be newly designed to support full fuel tank capacity gross weight (322,500 pounds). The brake system will be upgraded to five rotor brakes and the antiskid to Mark III configuration to provide required aircraft landing, refused takeoff and ground handling performance capability.

Flight Control Augmentation System (FCAS) — The FCAS provides two functions: (1) a fulltime series yaw damper function to damp dutch roll, and (2) an Engine Failure Assist System (EFAS) function to assist the pilot in reducing runway centerline deviation and roll response of the airplane, following an outboard engine failure. The FCAS will automatically provide up to 10 degrees of rudder authority to aid the pilot in directional control during engine out conditions.

Hydraulic System — The hydraulic system is basically the same.

Electric System — The electrical system incorporates three 40 KVA integrated drive generators plus new generator controls.

Auxiliary Power Unit (APU) — Dual APUs will replace the existing APU. The two APUs will be used to quick start the engines during alert operations and to provide ground heating and cooling. Yes, I did say ground cooling.

The most important question is, "When are we going to see the first reengined KC-135?" The first aircraft goes in for modification in February 1982 and is scheduled for flight test from October 1982 through September 1983. The follow-on production decision should be finalized this summer. It's been a long road for the reengined KC-135, and it'll be several more years before you see them in the field. As currently planned, many of you will be flying the KC-135R by late 1984 or early 1985.

Continued from pg. 19

that "pivot point" technique with the modification because the SRAM ranges on the active point (the bomb target) rather than the reference point (the OAP). Therefore, the nav team cannot update the SRAM immediately prior to bomb release without using an OAP.

However, it is possible to fix after the bomb release. Test results indicate the best scores with the modification are achieved by loading a SRAM LPF as an AOU "T" number and stepping to that fix point to acquire the LPF after bomb release. That fix may also have been the last bombing OAP for the bomb release in which case the crosshairs will not move after release. The radar navigator will simply resynchronize and take the fix. Immediately after the fix, the nav team will process the SRAM launch and step the AOU to the next action point. Using this technique, the SRAM is updated directly on the radar fix point and the drift time is approximately 30 seconds. Diagram two illustrates the AOU plan for this type of run.

After release on T-17, the second target, the radar navigator selects track and the AOU steps to T-18, the fix point. The FCI will swing to the fix point and the pilots must fly bomb run heading to the navigation point. In this case, the OAP is T-18 and OAP 18-1 so the fix can be taken with offset one selected. After the fix, the radar navigator must step the AOU to T-19 to have an FCI to the next navigation point. The navigator then displays his SRAM target and prepares for launch.

While testing this technique, the only disadvantages found were the need for an additional "T" number and the coordination required to preclude centering the FCI on an OAP. Test crews were enthusiastic about the versatility inherent in this modification and experienced very few problems adapting to the new system. The crew training program consisted of a 90 minute briefing and one checkout flight using off course SRAM fixes. Test results confirmed the aircrews' ability to master these changes in one flight.

319th Bomb Wing crews were very enthusiastic about this change and enjoyed the various test sequences. They were unanimous in their desire to see the wiring change incorporated as a permanent modification. Preliminary test results confirm the concept and indicate that advantages of the system far outweigh the minor problems. The increase in SRAM system accuracy is particularly significant. 319th Bomb Wing personnel are looking forward to incorporating the full potential of this modification in plans for future higher headquarters directed missions.

Cream, Sugar

TSgt David C. Sharpe
Central Flight Instructor Course
Castle Air Force Base

Times have changed since the beginning of the old Army Air Corps. Those were the days when an enlisted man may have been a pilot and often times was. As aircraft size increased and technology advanced, other positions on the aircraft were occupied by enlisted flyers. The B-52 came along, crewed by a professional group of people, five officers and one enlisted man. Officers occupy positions now that used to be enlisted. Apparently a need arose to have a commissioned officer occupying the positions that control the deadliest weapon on God's earth today. I can certainly see this to an extent.

What I'm pointing out is that standards are continuing to rise with the responsibility and we the enlisted crew members must continuously strive to meet these higher standards of our profession. This profession is Defensive Aerial Gunner.

How do we know if the knowledge and skills we have will be adequate for accomplishing our job? Presently, I don't think we really do. We can only assume or "hope" that we do. The radar navigators are scored on their bombing, low and high level. The navigators are scored from their nav legs and whether or not the airplane gets to where it's supposed to go. The EW gets scored on his ECM runs. The pilots are scored by whether the bombs get on target and whether we arrive home to the wife and kids. The gunner is not scored on many things and we take some ribbing about getting the coffee. We do have fighter intercept exercises, and we do have fireouts, or rather the airplane has fireouts. We just don't have a method of how well the fireout would tie in with a fighter intercept. (If we believed the fighter pilots, we'd always be shot down). We must continuously educate ourselves to conform to the highest standards of our profession.

Funk and Wagnall defines profession as "an occupation that properly involves a liberal, scientific, or artistic education". It then goes on to define a professional as "one skilled in a profession".

The Air Force spends about $163,000 training a gunner. To me, that would definitely qualify my job as a gunner of a B-52 as a profession, and a good one at that. Is it a responsible profession? Let's stop for a minute and see.

The B-52 is part of our nuclear Triad of defense. It has to go where it's supposed to, and get the job done. The responsibility to defend this multimillion dollar aircraft crewed by six valuable human lives rests with us, the Gunners.

Now, that's what I call a responsible profession! I shudder to think of the responsibility I carry on my shoulders if the time should come again. With such a responsible profession, I think we owe it to our fellow crew members and to the Air Force to be the best professionals we can be.

I've oftentimes tried to describe what a professional gunner should be. Obviously, being "skilled in our profession" is a good place to start. And where does a gunner start? Here at Castle AFB and Carswell AFB.

CFIC CORNER

and Aerial Gunnery

When a gunner leaves Castle or Carswell, he has a vast amount of knowledge "swimming around his memory banks." How many of you can still solve an algebraic equation or remember which part of the brain controls motor skills in the human body? Probably not too many. I'm pretty sure we're still proficient at lunch or recess. We didn't continually use this knowledge, so for the most part, it's fallen by the wayside. The same will happen to these gunners that graduate from CCTS. This knowledge needs to be put to use, whether it be with classes on alert, by reviewing it during trainer periods, or just sitting around during bull sessions. I know at the present time the latter doesn't happen too much. We are under the WAPS testing system and there is a tendency for everybody to be afraid that the next guy will know a little more than he does and achieve a better score on the SKT test. If you know your job, this just won't be so.

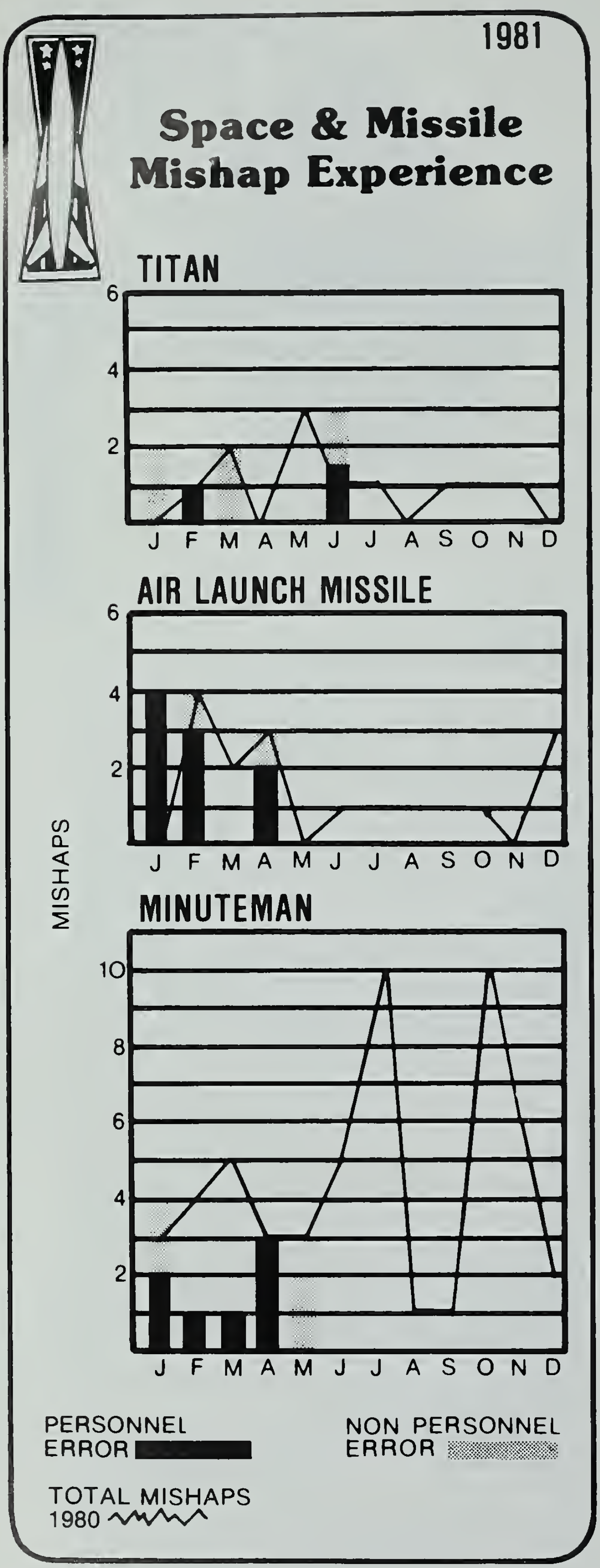
The Fire Control System proved its worth in Viet Nam. It was an effective deterrent to fighters, and when the enemy didn't figure it that way, two Mig pilots never returned home to dinner. All we can do at the present time is have the knowledge of the system and the tactics to best employ it under all conditions and with any malfunction.

The Central Flight Instructor Course was not designed to give you this knowledge. This knowledge was gained at CCTS when you first went through gunnery school. Our job here is to strengthen this knowledge and turn out the finest instructors in not just SAC, but the Air Force.

More can be gained from your stay here at CFIC with a little preparation on your part. Review AFM 50-62, Principles and Techniques of Instruction. Much of your instruction during your first three days will be taken from this manual, and this information will be applied throughout the remainder of the school. Another source of reference is Study Guide 12005, A Guide to Effective Instruction and Evaluation. These documents establish the fundamentals you'll need to be an effective instructor. Review the Dash 1 and learn your amplified. Study the modes in the Dash 4 and Dash 5. There will be a lot of discussion on the Fire Control System and aircraft systems. Last but not least, review all the Regulations and Manuals that pertain to gunnery. Preparation on your part will enable you to gain the most benefit from CFIC.

Once you leave CFIC, you can use what you have learned. Don't just sit around with the instructor stamp on your forehead and fall back into the same old routine. Get with your wing gunner and see about holding a few classes. When you're giving a trainer ride, put in a little extra instead of just filling a square. Use these two hours to review the system and talk about malfunctions. Fine tune all the EWO procedures that we can't practice in our normal daily flying. When you're flying with someone, talk about some of those techniques of yours and impart some of that expertise. Use your pre-briefs to insure you'll get the most of the training sortie. Use your critique to iron out any of those problem areas encountered during the flight.

If each of us are the professional instructors we should be, we would have the most professional bunch of gunners SAC has ever known. If the time comes to finally do our job of defending the B-52, there won't be a doubt in anyone's mind as to whether or not we can do it.



GROUND HALF QUICK DISCONNECT

During a scheduled download of stage 1 fuel, the fill/drain ground half quick disconnect was observed leaking significantly. The maintenance team immediately tightened it to the fully connected position. With a good connection and liquid in the lines, the offload was continued. Fuel vapors accumulated in the flame deflector from a continuous fuel leak and were continually diluted with water spray. After flow to stage 1 was completed, the ground half disconnect was removed from the missile and connected to the fixed system. A purge of all lines was completed and chlorine bleach added to neutralize the fuel in the flame deflector. Until a fill/drain ground half quick disconnect mod is complete, all units have been directed to remove, clean, inspect and pressure check the disconnect prior to scheduled propellant transfer operations.

I (EYE) PROTECTION

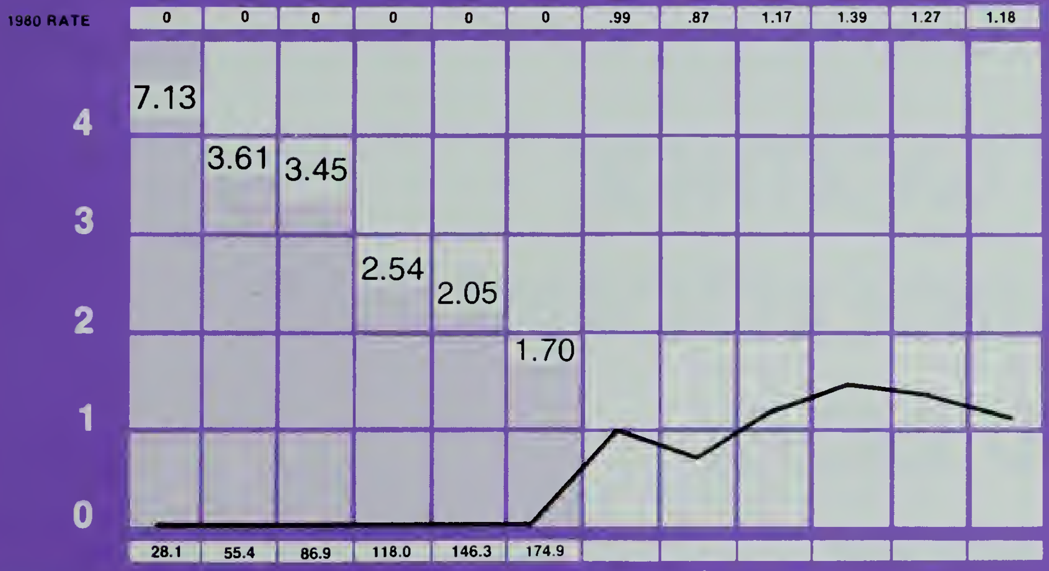
A quick look at recent class C mishaps and HAPs emphasizes the need for suitable eye protection devices. Individuals have been exposed to numerous hazardous chemicals, fumes and cleaning liquids. Supervisors and functional managers are tasked with insuring appropriate eye protection is procured, personnel trained and that the devices are stored and handled properly. Enforcement of proper eye protection must be impartial when applied; and the proper attitude and viewpoint by the individual is essential if the maximum protection is to be achieved.

Current technical data will require the use of specific eye protection by way of a warning. This provides protection for tasks where eye hazard exposures are preventable through use of goggles or faceshields. In some cases, faceshields will not protect the individual from sprays or splashes which can get up under the faceshield. To provide maximum protection the use of a chemical goggle is warranted.

If the eye becomes exposed, several self-help first aid steps are essential to prevent permanent eye damage. Initially the victim must irrigate the eye with clean water from standard eyewash fountains, emergency showers or other available sources. Usually a minimum of 15 minutes of irrigation is recommended and should be continued until medical help is available. Remember, the "eye" you save may be your own.

1981 Flying Safety Rate

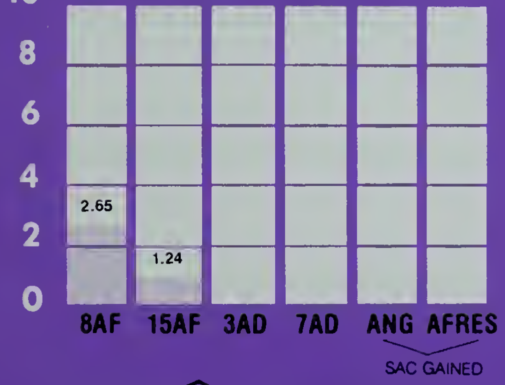
SAC CLASS A MISHAP RATE (PER 100,000 FLYING HRS)



CUMULATIVE FLYING TIME (1,000 HRS)

MISHAPS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1980	0	0	0	0	0	0	2	0	1	1	0	0
1981	2	0	1	0	0	0						

1981 SUBORDINATE CMD RATES



LEGEND = 1980 RATE (SAC)
+ = ANG
• = AFRES

MISHAP STATUS

KC-135 A	JAN '81
FB-111A	JAN '81
RC-135S	MAR '81

BIG INSTRUMENT

OF WEATHER, THUNDERSTORMS, AND RADAR

Captain James M. Sullivan
Instrument Division
1st Combat Evaluation Group

Just what we needed — a new manual! While it may seem that we are inundated with new rules, regs, and manuals, the book to which I refer is really a supplement to an existing pilot guidebook. I'm talking about AFM 51-12, Vol II, ***Weather For Aircrews***. This second volume of the venerable "weather book" is really a concise summary of some information contained in the basic manual. During this brief discussion, I will use material from AFM 51-12, Vol II, as well as from the Airman's Information Manual (AIM).

Every pilot is aware that a working knowledge of weather phenomena and weather detection equipment is crucial to flight safety. One particular weather hazard is worthy of still more discussion — the thunderstorm, the cb, the cumulonimbus. Now, we all know the first rule of thunderstorms: ***stay away!*** AFR 60-16 and supplement provide guidance for Air Force pilots for flights near thunderstorms. Specifically, we are directed to alter route of flight to avoid the thunderstorm activity: "There is no peacetime mission that requires. . . penetration." That's easy to say, but exactly how do we go about avoiding the turbulence, precip, icing, hail, lightning, and wind shear and live to fight another day?

All pilots have preflight weather briefings, PMSV, and air traffic control to assist them. Once airborne, however, radar is the most frequently used method by which SAC flyers thread their way through the air clear of thunderstorms. While radar is very helpful, both ground and airborne radar are subject to certain limitations of which we should be aware.

Ground Radar

Any radar reflects the precipitation in the thunderstorm, not the entire extent of the associated effects. Military weather radar can display precipitation targets within 200 NM of the station. Height information is limited to within 120 NM. When weather radar is located at the PMSV, the weather forecaster can provide radar weather details to pilots in the area. The weather forecaster, however, is not equipped to provide vector information to pilots.

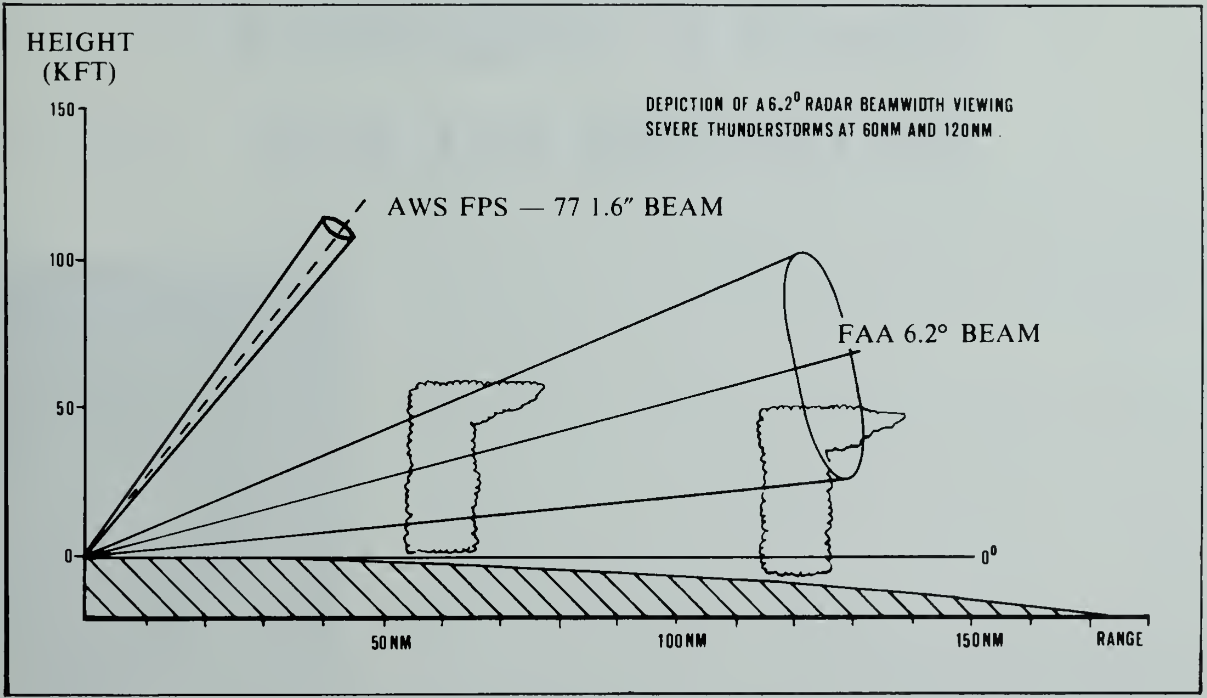
Air Route Traffic Control Centers (ARTCC) are primarily charged with maintaining safe aircraft separation. However, Air Traffic Control can provide weather avoidance service on a time-available basis. This service includes transmitting PIREPs and, in some cases, hazardous enroute weather advisories formulated by meteorologists stationed at the ARTCC. Of course, radar advisories of depicted severe weather are also available, along with the capability to vector aircraft.

This ATC radar service has its limitations. Since FAA radars rotate at a fixed elevation, cloud/storm top information is not available. On the other hand, military weather and Air Weather Service radars can adjust elevation to measure tops of heavy precipitation displayed. The ATC fixed elevation radar may not accurately display large storms beyond 60 NM and may miss smaller storms (see Fig 1). The controller will certainly attempt to provide routing around severe weather. The pilot must be aware, however, that the controller may not see the whole weather picture. Also, vector assistance is dependent upon the primary ATC responsibility — safe separation of IFR aircraft.

Airborne Radar

Most SAC aircraft are equipped with airborne radar which can be used to detect and avoid thunderstorms. Variable tilt and gain can effectively identify heavy precipitation returns and provide options to maneuver clear of severe weather. Again, there are limitations in that storm tops may not be apparent and heavy weather at near-range may prevent detection of weather at a greater distance. Furthermore, the type of airborne equipment and operator experience are factors in the reliability of information received.

A word of caution. While using ground or airborne radar to maneuver around or between thunderstorms, pilots may well avoid the hazards of hail, icing, lightning, and the heaviest precipitation. Radar does ***not*** display turbulence. As the AIM warns, "no flight path through an area of strong or very strong radar echoes separated by 20-30 miles or less may be considered free of severe turbulence." Therefore, always employ turbulent air penetration procedures when operating in the thunderstorm area. The ride may be rough, but sound judgment, good airmanship, and effective use of radar aids available will minimize wear and tear on you and your aircraft.


HEIGHT (KFT)
150
100
50
0
DEPICTION OF A 6.2° RADAR BEAMWIDTH VIEWING SEVERE THUNDERSTORMS AT 60NM AND 120NM.
AWS FPS — 77 1.6″ BEAM
FAA 6.2° BEAM
0°
50NM
100NM
150NM
RANGE

Note: The previously mentioned characteristics of airborne radar will generally be effective at high altitude; however, the radar is subject to several equipment limitations and restrictions for operations at low altitude. Consequently, the pilots should use extreme caution when relying solely on airborne radar during low level operations in the vicinity of thunderstorms. (Reference "The First Signs of Spring," by Maj St. John, Hq SAC/DOW, in our May 1981 issue of *Combat Crew*.)

Missile Crew of the Month

The 341st SMW Crew R-013, Maj Michael J. Riley, MCCC, and 1Lt Kirk D. Wallendorf, DMCCC, is Strategic Air Command Missile Crew of the Month.

Crew R-013 displayed outstanding judgment, system knowledge and leadership during critical situations under the intense pressure of an unusually stressful and long (30 hours) duty tour at a launch control facility. Upon site arrival, the facility manager briefed the crew on inoperative LCC support equipment including the Minuteman power processor, the diesel generator, the instrument air compressor, the furnace and the elevator. Due to the inoperative elevator the crew descended to the launch control center using the 65-foot escape ladder. They received the changeover briefing amid the roar of the emergency air conditioning unit. At that time, primary power was lost and an exercise execution message was received. The outgoing crew was exited and inspections were started; however, two and one-half hours later the inspections were incomplete due to the excessive workload and emergency situations. During that time, the crew reacted to numerous events including multiple power failures with subsequent complete commercial power/topside communication loss and a fire topside. The crew was able to determine, through another LCF, that the main water pump was destroyed by the fire limiting firefighting capability. However, the fire had been extinguished and there were no reported injuries. Through their alertness and professionalism major incidents and accidents had been prevented.

PROFESSIONAL PERFORMERS

Maintenance Airman of the Month

SSgt Gail J. Pettigrew, 376th SW, Kadena AFB, is Maintenance Airman of the Month. Currently assigned as NCO in charge of the nonpowered aerospace ground equipment section, Sgt Pettigrew insures that the scheduled inspections for equipment are timely and professional. She initiated a one on one and group training program for each newcomer and recent maintenance standardization and evaluation program ratings attest to the success of her training program. Her exceptional ability to supervise and manage available resources has been validated by the outstanding ratings her section has received. Her hands-on followups have netted her 50 quality control evaluations in the past year and her pass rate has been virtually flawless. Sgt Pettigrew is a credit to the Strategic Air Command and the United States Air Force.

410th Bombardment Wing Crew: (L-R kneeling): CP Capt. Schwarz, P Capt. Green, IP-28BMW Capt. Wickham. (L-R standing): EW Capt. Duryea, NN Capt. Ford, AG SSgt. Riggs, RN Capt. Martini, IRN-5BMW Capt. Scott, and EW-28BMW 1Lt. Bonam.

Flying Crew of the Month

During takeoff on a mission to Andersen AFB, the number eight main tire on a B-52 from the 410th Bomb Wing, picked up a wheel hub from a piece of AGE equipment. It dislodged during takeoff roll and caused the number eight tire to blow. The crew was unaware of possible tire damage until level off when they were informed that tire fragments had been found on the runway. Because there were no other problem indications, the mission continued.

After the second air refueling, unrelated hydraulic fluid leaks resulted in complete loss of the number six and seven hydraulic systems. The resulting lateral control problems were countered with differential throttles and rudder. A decision was made to terminate the mission. During the return flight, the number seven engine was shut down due to low oil pressure. With adverse weather at all alternates precluding a diversion, a third refueling was required in order to reach Andersen.

A strip alert tanker was launched and rendezvoused with the B-52. Control problems during air refueling were anticipated and Boeing was consulted for advice. It was decided to refuel using a 6,000 pound right wing heavy fuel imbalance, airbrakes at position one, and six units of right rudder trim. Number one and two throttles were used for lateral control. Since a hydraulic leak was suspected, the right standby pump was not used until just prior to landing. Thirty-eight thousand pounds of fuel were successfully onloaded at night in marginal weather.

After arriving in the Andersen area, a controllability check and visual scan of the main gear were performed. Damage to the number eight tire was confirmed and all gear except the right aft were lowered. Full flaps and airbrakes position four at 250,000 pounds gross weight presented no lateral control problems and the pilot and crew successfully accomplished the seven engine, partial gear, partial spoiler landing 25 hours after their initial takeoff. The calm analysis, expertise and coordination shown by all crewmembers was instrumental in the successful termination of the mission.

SAC SAFETY SCREEN

380 BMW, Plattsburgh Crew E-160: P Capt Richard A Robbins, CP 1Lt Edward F Petrella, N Capt George S Pugh, BO Sgt Michael A Raymond

380 BMW, Plattsburgh Crew R-122: P Capt George E Waldron, CP 1Lt Sigsbee J B Nelson, N 2Lt Randall V Callam, BO A1C Stuart J Stravitsch

380 BMW, Plattsburgh Crew E-57: P Capt Thomas B Moncure, RN Capt Richard A Tennant

384 AREFW, McConnell Crew S-101: IP Capt Ian J Hayes, CP Capt John A Herchak, IN Capt Teddy G Wood, IBO SSgt Hubert R Driskill

384 AREFW, McConnell Crew R-156: P Capt John H Fravel, CP Capt Ronald L Small, N 1Lt Ross C Zamora, BO A1C Randall W Johnson

379 BMW, Wurtsmith Crew S-140: IP Maj Arthur R Bode, CP Capt James A Bontadelli Jr, IN Capt Robert E Erdahl Jr, IBO SSgt Craig S Blessing

96 BMW, Dyess Crew E-33: FP Capt Edwin S Burnet, ICP Capt David E Gionet, IB Capt Harry L Winters, NN 2Lt Kenneth B Havens, IE 1Lt Charles W Albro Jr, IS SSgt Donald L Holmes

96 BMW, Dyess Crew R-107: FP Maj Richard A Monschke, CP 1Lt Frank S Meyer, NN Capt Rogers O Tyler, BO Sgt John M Augustine

28 BMW, Ellsworth Crew E-05: IP Capt Lawrence M Cole, CP Capt Richard S Beard, IRN Capt Richard S Kingman, IN Lt Marcus S Carlton, EW Lt Robert M Wiehr, AG SSgt Boliver K McNeal

28 BMW, Ellsworth Crew R-107: P Capt William J Locken, CP Capt Robert G Baker Jr, NN Capt Thomas H Shafer, BO A1C Richard D Wunder

91 SMW, Minot Crew E-033: MCCC 1Lt Ernesto Rosado, DMCCC 2Lt Robert F Moore

351 SMW, Whiteman Crew E-166: MCCC 1Lt Mark J Coyne, DMCCC 2Lt Milo V Pogle

308 SMW, Little Rock Crew R-025: MCCC 1Lt Russell C Barbero, DMCCC 2Lt Rodney K Robinson, MSAT A1C Scott F Bashaw, MFT A1C Warren A Johnson

128 AREFG, Gen Mitchell ANG Base: P Lt Col Francis T Parker, P Maj John E Bailey, IN Capt Douglas E Callaghan, IBO MSgt Lee S Cornell

National Safety Council Awards
1980

Award of Honor

55th Strategic Reconnaissance Wing
68th Bombardment Wing
96th Bombardment Wing

Award of Merit

2d Bombardment Wing
19th Bombardment Wing
97th Bombardment Wing
351st Strategic Missile Wing
379th Bombardment Wing

Award of Commendation

5th Defense Space Communications Squadron
340th Air Refueling Group
3901st Strategic Missile Evaluation Squadron
4301st Air Base Group

President's Award Letter

Detachment 2, 1st Combat Evaluation Group
Detachment 4, 1st Combat Evaluation Group
Detachment 7, 1st Combat Evaluation Group
Detachment 8, 1st Combat Evaluation Group
Detachment 9, 1st Combat Evaluation Group
Detachment 11, 1st Combat Evaluation Group
Detachment 14, 1st Combat Evaluation Group
Detachment 1, 57th Air Division
16th Surveillance Squadron
4684th Air Base Group
TUSLOG Detachment 8

UNIVERSITY OF FLORIDA
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HALL OF FAME

FLARE

TACTICAL FLYING

OVER TWENTY-FIVE YEARS

170 AREFG, McGuire (NJANG)	Feb '56

OVER TWENTY-THREE YEARS

171 AREFW, Greater Pittsburgh (PAANG)	Mar '58
157 AREFG, Pease (NHANG)	June '58

OVER TWENTY-TWO YEARS

940 AREFG, Mather (USAFR)	May '59

OVER TWENTY-ONE YEARS

307 AREFG, Travis	Sep '59

OVER TWENTY YEARS

151 AREFG, Salt Lake City (UTANG)	Feb '61
161 AREFG, Sky Harbor (AZANG)	Apr '61
126 AREFW, Chicago O'Hare (ILANG)	Apr '61

OVER NINETEEN YEARS

134 AREFG, McGhee Tyson (TNANG)	Aug '61
11 SG, Fairford	Feb '62
340 AREFG, Altus	Jun '62

OVER EIGHTEEN YEARS

96 BMW, Dyess	Aug '62

OVER SEVENTEEN YEARS

19 BMW, Robins	Aug '63

OVER SIXTEEN YEARS

160 AREFG, Rickenbacker (OHANG)	Dec '64
320 BMW, Mather	Jul '65

OVER FOURTEEN YEARS

452 AREFW, March (USAFR)	Sep '66
92 BMW, Fairchild	Feb '67
55 SRW, Offutt	Jul '67

OVER THIRTEEN YEARS

2 BMW, Barksdale	Aug '67

OVER TWELVE YEARS

5 BMW, Minot	Feb '69

OVER ELEVEN YEARS

42 BMW, Loring	Sep '69
141 AREFW, Fairchild (WAANG)	Oct '69
28 BMW, Ellsworth	May '70

OVER NINE YEARS

101 AREFW, Bangor (MEANG)	Mar '72
306 SW, Mildenhall	Apr '72
416 BMW, Griffiss	May '72

OVER EIGHT YEARS

305 AREFW, Grissom	Aug '72
379 BMW, Wurtsmith	Apr '73

OVER SEVEN YEARS

931 AREFG, Grissom (USAFR)	Feb '74
384 AREFW, McConnell	Mar '74
189 AREFG, Little Rock (ARANG)	May '74

OVER SIX YEARS

43 SW, Andersen	Dec '74

OVER FIVE YEARS

68 BMW, Seymour Johnson	Sep '75

OVER FOUR YEARS

410 BMW, K.I. Sawyer	Apr '77
190 AREFG Forbes (KSANG)	Apr '77
128 AREFG Milwaukee (WIANG)	Jul '77

ICBM

OVER SIXTEEN YEARS

1 STRAD, Vandenberg	Sep '64

OVER ELEVEN YEARS

341 SMW, Malmstrom	Apr '70

OVER EIGHT YEARS

390 SMW, Davis-Monthan	Jul '73

OVER SIX YEARS

351 SMW, Whiteman	Oct '74
91 SMW, Minot	Nov '74

OVER FIVE YEARS

321 SMW, Grand Forks	Feb. '76

To gain listing in the Hall of Fame, a SAC or ARF unit must be Class A mishap-free for 48 months.

*U S Government Printing Office
1981 -- 765-047/6